

WHAT IS CLAIMED IS:

- 1                   1.     A developing method comprising:  
2                   providing a wafer in a reaction space, wherein said wafer has an exposed  
3 photoresist thereon;  
4                   coating a developing solution on a surface of said wafer;  
5                   rotating said wafer;  
6                   rinsing a normal surface and a backside surface of said wafer; and  
7                   stopping rinsing said normal surface of said wafer while keeping rinsing  
8 said backside surface of said wafer for a specific time period.
- 1                   2.     A developing method according to claim 1 wherein said reaction  
2 space is within a developing coating apparatus.
- 1                   3.     A developing method according to claim 1 wherein rotating said  
2 wafer comprises increasing a rotating rate of said wafer.
- 1                   4.     A developing method according to claim 3 further comprising  
2 stopping rotation of said wafer for a period to perform a developing step on said wafer  
3 before increasing the rotating rate of said wafer from a low speed to a high speed.
- 1                   5.     A developing method according to claim 3 wherein rotating said  
2 wafer comprises increasing the rotating rate of said wafer from a low speed of about 30-90  
3 rpm to a high speed of about 1000-4000 rpm.
- 1                   6.     A developing method according to claim 1 further comprising  
2 exhausting said reaction space while rotating said wafer.
- 1                   7.     A developing method according to claim 1 wherein rinsing said  
2 backside surface of said wafer is performed by a nozzle disposed near said backside  
3 surface of said wafer.
- 1                   8.     A developing method according to claim 7 wherein said nozzle is  
2 disposed to direct a solution to said backside surface of said wafer at an incident angle of  
3 substantially less than about 90 degrees relative to said backside surface of said wafer.

1                   9.     A developing method according to claim 1 wherein said specific  
2 time period of stopping rinsing said normal surface of said wafer and keeping rinsing said  
3 backside surface of said wafer is at least about five seconds.

1                   10.    A developing method according to claim 1 wherein rotating said  
2 wafer comprises rotating said wafer at a sufficiently low speed while coating said  
3 developing solution on said surface of said wafer to form a fluid wall to prevent said  
4 developing solution from flowing to at least a portion of said backside surface of said  
5 wafer.

1                   11.    A method for reducing contamination formed on a backside surface  
2 of a wafer, the method comprising:  
3                   providing a wafer in a reaction space, wherein said wafer has an exposed  
4 photoresist thereon;  
5                   coating a developing solution on a surface of said wafer;  
6                   rotating said wafer and exhausting said reaction space while rotating said  
7 wafer;  
8                   rinsing a normal surface and a backside surface of said wafer; and  
9                   stopping rinsing said normal surface of said wafer and while keeping  
10 rinsing said backside surface of said wafer for a specific time period, thereby reducing the  
11 contamination forming on said backside surface of said wafer.

1                   12.    A method according to claim 11 wherein said reaction space is  
2 within a developing coating apparatus.

1                   13.    A method according to claim 11 wherein rotating said wafer  
2 comprises increasing a rotating rate of said wafer.

1                   14.    A method according to claim 11 wherein exhausting said reaction  
2 space comprises generating an outward-flowing field at said backside surface of said  
3 wafer.

1                   15.    A method according to claim 11 wherein rinsing said backside  
2 surface of said wafer is performed by a nozzle disposed near said backside surface of said  
3 wafer.

1                   16.     A method according to claim 15 wherein said nozzle is disposed to  
2     direct a solution to said backside surface of said wafer at an incident angle of substantially  
3     less than about 90 degrees relative to said backside surface of said wafer.

1                   17.     A method according to claim 11 wherein said specific time period  
2     of stopping rinsing said normal surface of said wafer and keeping rinsing said backside  
3     surface of said wafer is at least about five seconds.

1                   18.     A developing method, applied in a developing coating apparatus  
2     comprising a chuck, at least one nozzle and a groove, the method comprising:  
3                   providing a wafer and supporting said wafer on said chuck of said  
4     developing coating apparatus with a backside surface of the wafer facing said groove,  
5     wherein said wafer has exposed photoresist thereon;  
6                   coating a developing solution on a surface of said wafer;  
7                   rotating said wafer and exhausting said developing coating apparatus to  
8     form a water wall between said wafer and an outer sidewall of said groove;  
9                   rinsing a normal surface and rising said backside surface of said wafer by  
10    said at least one nozzle; and  
11                  stopping rinsing said normal surface of said wafer and keeping rinsing said  
12    backside surface of said wafer for a specific period, thereby removing contamination  
13    remaining on said lower surface of said wafer.

1                   19.     A developing method according to claim 18 further comprising  
2     increasing a rotating rate of said wafer prior to rinsing said wafer.

1                   20.     A developing method according to claim 18 wherein said nozzle is  
2     disposed to direct a solution to said backside surface of said wafer at an incident angle of  
3     substantially less than about 90 degrees relative to said backside surface of said wafer.

1                   21.     A developing method according to claim 18 wherein said specific  
2     time period of stopping rinsing said normal surface of said wafer and keeping rinsing said  
3     backside surface of said wafer is at least about five seconds.